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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,379	02/12/2004	Iwen Chao	110348-135995	8999

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EXAMINER

WILLE, DOUGLAS A

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 04/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/779,379

Applicant(s)

CHAO, IWEN

Examiner

Douglas A. Wille

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>0305</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 13, first line has "...barrier comprises of a ...". It appears that something has been left out. Correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 – 4, 6 – 9, 11 - 13, 16 - 18 and 20 - 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Hattori et al.
6. With respect to claims 1 and 16, Hattori et al. show a structure and a method of forming the structure (see cover Figure) a semiconductor device 16 in a region 13 and a low resistance barrier 12, 22 which isolated the device.
7. With respect to claim 2 regions 12, 22 are of opposite type to 13.
8. With respect to claims 3 and 17, there is a deep trench 21 which extends into the substrate
- 12.

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9. With respect to claims 4 and 20, region 13 is n-type.
10. With respect to claims 6 and 18, region 12 is connected to ground.
11. With respect to claim 7, the substrate 12 is p-type.
12. With respect to claims 8 and 21, there is a plug 22.
13. With respect to claims 9 and 22, the plug may have a separate connection (Figure 8).
14. With respect to claims 11 and 23, the trench has a dielectric filling (column 3, line 29).
15. With respect to claim 12, region 12 is connected to ground.
16. With respect to claim 13, there is a capacitor 25 between 12 and 24.

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claims 5, 10, 14, 19, 24 and 28 - 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hattori et al. in view of Li et al.
19. With respect to claims 5 and 19, Hattori et al. show the isolation structure but do not specify the type devices that are included in region 16. Li et al. shows that a similar structure can be used to isolate device such as CMOS and BiCMOS (column 1, line 26). It would be obvious to apply the Hattori et al. technique to those specific devices shown by Li et al. since they are known in the art.

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20. With respect to claims 10 and 24, Hattori et al. do not specify the doping of regions 12, 22 but Li et al. show that such regions are doped to up to $5(10)^{19}$ and it would be obvious to use this level since it is known to be functional.

21. With respect to claim 14, the Li et al. doping will produce resistivity in the claimed range.

22. With respect to claim 28, Hattori et al. do not specify the circuitry but it would be obvious to use any circuitry with such a device structure including a bus and a network. Hattori et al. show the isolation structure but do not specify the type devices that are included in region 16. Li et al. shows that a similar structure can be used to isolate device such as CMOS and BiCMOS (column 1, line 26). It would be obvious to apply the Hattori et al. technique to those specific devices shown by Li et al. since they are known in the art.

23. With respect to claim 29, Hattori et al. do not specify the circuitry but it would be obvious to use any circuitry with such a device structure including a bus and a network. Hattori et al. do not specify the doping of regions 12, 22 but Li et al. show that such regions are doped to up to $5(10)^{19}$ and it would be obvious to use this level since it is known to be functional.

24. With respect to claim 30, Hattori et al. do not specify the circuitry but it would be obvious to use any circuitry with such a device structure including a bus and a network. Hattori et al. show regions 12 and 22.

25. Claims 15 and 25 - 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hattori et al.

26. With respect to claim 15, Hattori et al. do not specify the depth of region 21 but it would be a matter of routine experimentation to determine the best depth for isolating such a device.

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27. With respect to claim 25, Hattori et al. do not specify the circuitry but it would be obvious to use any circuitry with such a device structure including a bus and a network.

28. With respect to claim 26, Hattori et al. show there is a deep trench 21 which extends into the substrate 12.

29. With respect to claim 27, region 12 is connected to ground.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas A. Wille whose telephone number is (571) 272-1721. The examiner can normally be reached on M-F (6:15-2:45).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Douglas A. Wille
Primary Examiner